



AMENDMENTS TO THE CLAIMS

(Original) An optical transmission system for transmitting a signal lightwave comprising a plurality of component signals each having a different wavelength, the optical transmission system comprising:

- (a) at least one optical transmitter;
- (b) at least one optical receiver;
- (c) an optical fiber transmission line that:
 - (c1) is installed between the at least one optical transmitter and the at least one optical receiver; and
 - (c2) has a length of at most 150 km; and
- (d) an optical component that:
 - (d1) is installed between the at least one optical transmitter and the at least one optical receiver; and
 - (d2) gives a loss to the signal lightwave;

the component signals including a component signal having a wavelength of λ_a and a component signal having a wavelength of λ_b ;

the optical transmission system being designed such that:

- (e) the total transmission loss in the optical fiber transmission line is smaller at a wavelength of λ_b than at a wavelength of λ_a ;
- (f) the insertion loss of the optical component is larger at a wavelength of λ_b than at a wavelength of λ_a ; and
- (g) the difference in power between the component signal having a wavelength of λ_a arriving at the at least one optical receiver and the component signal having a wavelength of λ_b

arriving at the at least one optical receiver is smaller than the difference in the total transmission loss in the optical fiber transmission line between the wavelengths λ_a and λ_b .

2. (Original) An optical transmission system as defined by claim 1, wherein the power of the signal lightwave decreases monotonously from the at least one optical transmitter to the at least one optical receiver.

3. (Original) An optical transmission system as defined by claim 1, wherein any of the component signals has a wavelength of at most 1,520 nm and any other of the component signals has a wavelength of at least 1,570 nm.

4. (Original) An optical transmission system as defined by claim 1, wherein each of the component signals has a bandwidth of at least 20 nm.

5. (Original) An optical transmission system as defined by claim 1, wherein the component signals have a wavelength spacing of at least 10 nm.

6. (Original) An optical transmission system as defined by claim 1, wherein the optical fiber transmission line has a transmission loss of at most 0.4 dB/km at a wave-length of 1.38 μ m.

7. (Original) An optical transmission system as defined by claim 1, wherein the at least one optical receiver comprises an avalanche photodiode.

8. (Original) An optical transmission system as defined by claim 1, wherein the at least one optical receiver comprises a PIN photodiode.

9. (Original) An optical transmission system as defined by claim 1, wherein the optical component is a member of the group consisting of an optical multiplexer for combining the component signals and an optical demultiplexer for separating the component signals.

10. (Original) An optical transmission system as defined by claim 1, wherein the optical component is a variable attenuator.

11. (Original) An optical transmission system as defined by claim 10, the optical transmission system further comprising:

(a) an optical multiplexer for combining the component signals; and
(b) an optical demultiplexer for separating the component signals; the variable attenuator being installed at a place selected from the group consisting of a place posterior to the optical multiplexer and a place anterior to the optical demultiplexer.

12. (Original) An optical transmission system as defined by claim 10, wherein the variable attenuator has a variable loss-wavelength dependence.

13. (Original) An optical transmission system for transmitting a signal lightwave comprising a plurality of component signals each having a different wavelength, the optical transmission system comprising:

- (a) at least one optical transmitter;
- (b) at least one optical receiver;
- (c) an optical fiber transmission line that is installed between the at least one optical transmitter and the at least one optical receiver; and
- (d) an optical component that:
 - (d1) is installed between the at least one optical transmitter and the at least one optical receiver; and
 - (d2) gives a loss to the signal lightwave;

the component signals including a component signal having a wavelength of λ_a and a component signal having a wavelength of λ_b ;

the optical transmission system being designed such that:

- (e) the total transmission loss in the optical fiber transmission line is smaller at a wavelength of λ_b than at a wavelength of λ_a ;
- (f) the insertion loss of the optical component is larger at a wavelength of λ_b than at a wavelength of λ_a ; and
- (g) the difference in power between the component signal having a wavelength of λ_a arriving at the at least one optical receiver and the component signal having a wavelength of λ_b arriving at the at least one optical receiver is smaller than the difference in the total transmission loss in the optical fiber transmission line between the wavelengths λ_a and λ_b .

14. (Currently Amended) An optical multiplexer for combining a plurality of component signals each having a different center wavelength to constitute a signal lightwave, the optical multiplexer having an insertion loss that increases with increasing ~~center wavelength of the component signals in a range including 1,520 nm to 1,570 nm and any of the component signals has a center wavelength in the range.~~

15. (Original) An optical multiplexer as defined by claim 14, wherein the component signals have a center-wavelength spacing of at least 10 nm.

16. (Cancelled)

17. (Currently Amended) An optical multiplexer as defined by claim 14, wherein ~~any of the component signals has a center wavelength of at most 1,410 nm and any other of the component signals has a center wavelength of at least 1,570 nm~~ the insertion loss increases with increasing wavelength in a range including 1,410 nm to 1,570 nm and any of the component signals has a center wavelength in the range.

18. (Currently Amended) An optical multiplexer as defined by claim 14, wherein ~~any of the component signals has a center wavelength of at most 1,310 nm and any other of the component signals has a center wavelength of at least 1,590 nm~~ the insertion loss increases with increasing wavelength in a range including 1,310 nm to 1,590 nm and any of the component signals has a center wavelength in the range.

19. (Currently Amended) An optical demultiplexer for separating a plurality of component signals each having a different center wavelength from a signal lightwave, the optical demultiplexer having an insertion loss that increases with increasing ~~center wavelength of the component signals in a range including 1,520 nm to 1,570 nm and any of the component signals has a center wavelength in the range.~~

20. (Original) An optical demultiplexer as defined by claim 19, wherein the component signals have a center-wavelength spacing of at least 10 nm.

21. (Cancelled)

22. (Currently Amended) An optical demultiplexer as defined by claim 19, wherein ~~any of the component signals has a center wavelength of at most 1,410 nm and any other of the component signals has a center wavelength of at least 1,570 nm~~ the insertion loss increases with increasing wavelength in a range including 1,410 nm to 1,570 nm and any of the component signals has a center wavelength in the range.

23. (Currently Amended) An optical demultiplexer as defined by claim 19, ~~wherein any of the component signals has a center wavelength of at most 1,310 nm and any other of the component signals has a center wavelength of at least 1,590 nm~~ the insertion loss increases with increasing wavelength in a range including 1,310 nm to 1,590 nm and any of the component signals has a center wavelength.

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Claims 24-27. (Cancelled)